

Electricity as Farmer's Best Hired Man

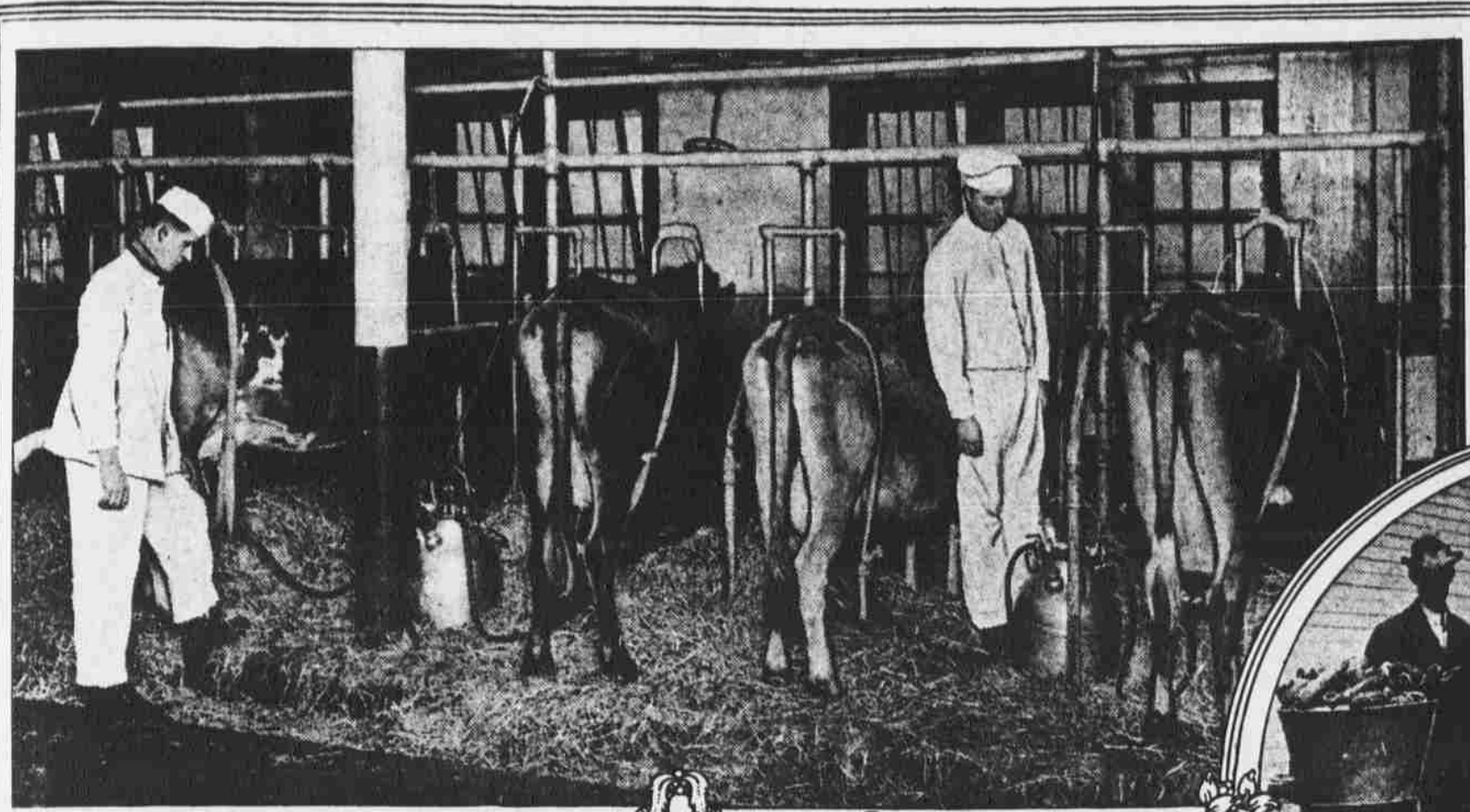
Women's Burdens as Well as Men's Lightened by Scores of Appliances Which Help to Offset Labor Shortage, Eliminate Drudgery in Household and Field and Reduce Costs

Information sent out from Washington regarding future production prospects is correct the problem of the farmer to-day is not only to increase production and not send living costs skyward but to produce the necessities of living at any cost.

A record of labor saving devices on the farms, made by the extension department of

advantages to the farmer, not only in economy but because they eliminate to a very large extent the drudgery of farm life. Cooking, washing and ironing without ashes, soot, small flame or gas or any kind are most apparent.

necessity of such labor, unless such device is very expensive, will be welcomed by the farmer. While steam, gas and distillate engines as prime movers cut the labor cost to a considerable extent they are in no way comparable to the saving brought about by the use of electric motors. In the arid regions, where fans, sewing machines, meat grinders, bread mixers, buffing and grinding machines. Then there is a portable motor, which may be moved about the farm and belted to the thrasher, ensilage cutter, grain elevator or other machinery without any radical change in the existing machinery. Even hand operated machines may be driven by small



MILKING MACHINES OPERATED BY MOTOR DRIVEN VACUUM PUMP

is authority for the statement that only about 1 per cent. of the boys that left the farms to answer the country's call for war results have returned to again take up production from the soil.

Out of every hundred ninety-nine have preferred to remain in the cities and reap there the higher returns for their labor. Federal census enumerators from all parts of the country have reported abandoned farms or farms with just enough help to supply the food wants of the family living upon them.

The Farmer's Great Problem.

The farmer's problem is a serious one. Increased production and decreased costs of production are the two outstanding phases. How can this be brought about? The farmer is limited to hiring more men to increase production because of the high wages now demanded for this work. If he did living costs would jump completely out of sight.

The solution seems to be some means whereby one man can do the work of two, perhaps three or even more.

In early days there were probably 400,000 Indians in North America, but in spite of the enormous per capita acreage available they were often in want of food. This was due to their crude and inefficient methods of tilling the soil.

Government statistics show manual labor on the farm the most expensive. The average cost of horse labor is second. Mechanical power is low. Obviously the substitution of mechanical power for manual and animal labor seems to be the solution. Today, by means of the improved methods and widespread adoption of agricultural machinery, this same area as tilled by the Indians produces food for a population of 90,000,000. It was in 1850 a general change from hand to machine methods of working the farms was made. Since then successive years have seen consistent improvements in the design and manufacture of agricultural power machinery and its adoption on farms of appreciable size has been widespread.

The farmer has profited enormously through the use of the tractor engine, with which he can plough from ten to one hundred acres a day at a greatly reduced cost per acre. He has also seen results from the wheat drill, corn planter, grain binder, threshing machine, cotton gin and other labor and time saving devices. In this machinery the mechanical power is mostly supplied by the gasoline engine.

The manufacturing plant, which is continually experimenting to secure the most efficient kind of power to supplant manual and animal labor with cheaper power and labor saving devices, attributes its present day success to electricity.

More than 90 per cent. of the city's population is now electrically served. The cost to the consumer of such service, based on an average of 10 cents per kilowatt hour (the equivalent of $\frac{1}{2}$ cent per horsepower), amounts to $\frac{1}{4}$ cent per lamp hour for lighting, based on the energy consumption of a 20-candlepower Mazda lamp.

Electricity Gaining Favor.

The cost of electric power when used for other purposes than illumination averages about 5 cents per horsepower hour. Both of these costs are decreasing and will continue to decrease as the demand grows.

A 1-horsepower motor costs approximately \$150 to \$250, with an operating cost averaging 5 cents per hour. A good horse costs from \$150 to \$250, with an operating cost averaging 10 cents per hour. A $\frac{1}{2}$ -horsepower motor, equivalent to 1-manpower, costs about \$40, with an operating cost of less than 1 cent an hour.

A glance at these figures will show the advantage of substituting electrical power for animal and manual labor whenever possible, especially in view of the fact that the cost of manual labor and horses is constantly rising and the supply does not meet the demand.

Twenty years ago an electric installation on a farm was a rarity. Fifteen years ago it was still thought of as being a great novelty, and not until about five years later did the farmer begin to seriously consider the many advantages of electricity. Since that time, however, the farmer's change in attitude has been rapid, and to-day he is an enthusiastic advocate of electric light and power. This is shown by the fact that America's various agricultural colleges and big electrical concerns are being flooded with inquiries on the subject.

Electricity at the present time can be advantageously applied to more than 125 various uses on the farm. Electric applications, even in their simplest form, bring great ad-

the New York State College of Agriculture reveals that many farm women are doing the housework with the equipment their grandmothers used. For example, in seventy homes only fifty-eight had washing machines and only two were power operated, but two had electric irons and only twenty-five had vacuum cleaners. In another fifty homes kerosene lamps were used in forty.

The time has come when farm capital should be invested in the farm home for labor saving devices and methods, the report concludes.

One of the principal advantages tending to promote the use of the electric motor is its simplicity. No source of power can compare with it in this respect. The horse must be fed and cared for, the gas engine must be adjusted, the steam engine requires a licensed engineer, but the motor needs only an occasional oiling and cleaning.

Electric power companies now supply current to the principal cities, towns and villages. They are anxious to expand and ready to reach out in the rural districts. The day for the farmer to electrify his farm is at hand. But the movement will be retarded until the farmer comes to a full realization of what electric service will mean to him and until he is prepared to use electrical energy in sufficient quantity to pay for its distribution.

The farmer cannot afford to carry a single crate of eggs to a distant market and sell those eggs by the dozen from house to house. Neither can the electric companies afford to run a line for miles into the country for the sake of a few scattered customers who may want the power only to supply a substitution for the kerosene lamp.

Not only has the use of farm machinery reduced the cost of farm products but it has been an aid in improving their quality. In some Western sections, irrigation is absolutely necessary in order to produce crops. As in the case of all other farm operations, labor is scarce, and any mechanical device which will eliminate the

large amount of water is required, it is often necessary to operate twenty-four hours a day for a month at a time and in many cases six months. The engine driven plants require an operator to be in practically constant attendance, while in the case of the motor driven plant a casual inspection every two or three days will be sufficient.

Now to turn to the every day farm. Lighting is the first thought. The majority of farms using electricity installed it principally for lighting purposes, for it was generally recognized that electricity furnishes the safest, cleanest, most effective and most convenient system of artificial lighting. It is especially valuable for use in farmhouses, stables and barns, where there is danger of fire when oil or gas lamps are used.

There are fifty or more household devices that can be used on the house lighting system, such as electric irons, small stoves, toasters, chafing dishes, water heaters, percolators, washing machines, water pumps,

motors by simply substituting a pulley. The characteristics of the electric motor render it especially valuable for operation of the dairy equipment. The requirements for modern sanitation have brought the vacuum process of milking into common use and electric motors are particularly adapted to drive the vacuum pump. The motor is more compact than the gas engine and may be installed in the cow barn, as there is an entire absence of fire risk with this equipment.

A big saving in this line is shown by figures supplied by John Bowditch, who operated a big dairy farm in Framingham, Mass. He says that a 3-horsepower electric milking machine paid for itself in seven months by reducing the necessary labor from twelve to five men. Each milking machine is capable of milking two cows at one time, and one man can operate two machines at a time, and thus milk twenty-two cows per hour. A man alone can milk about six cows an hour.

Moreover, extensive tests by the New York State Agricultural Experimental Station have proved that no injurious effects are produced by the use of mechanical milkers. Electric milking is but one of twenty or more uses electricity can be put to about the dairy. Motors are well adapted to operating cream separators and pasteurizers, churns, electric refrigerators, can and bottle washers and other devices. They take but little power and in most instances can be operated from an incandescent lighting circuit.

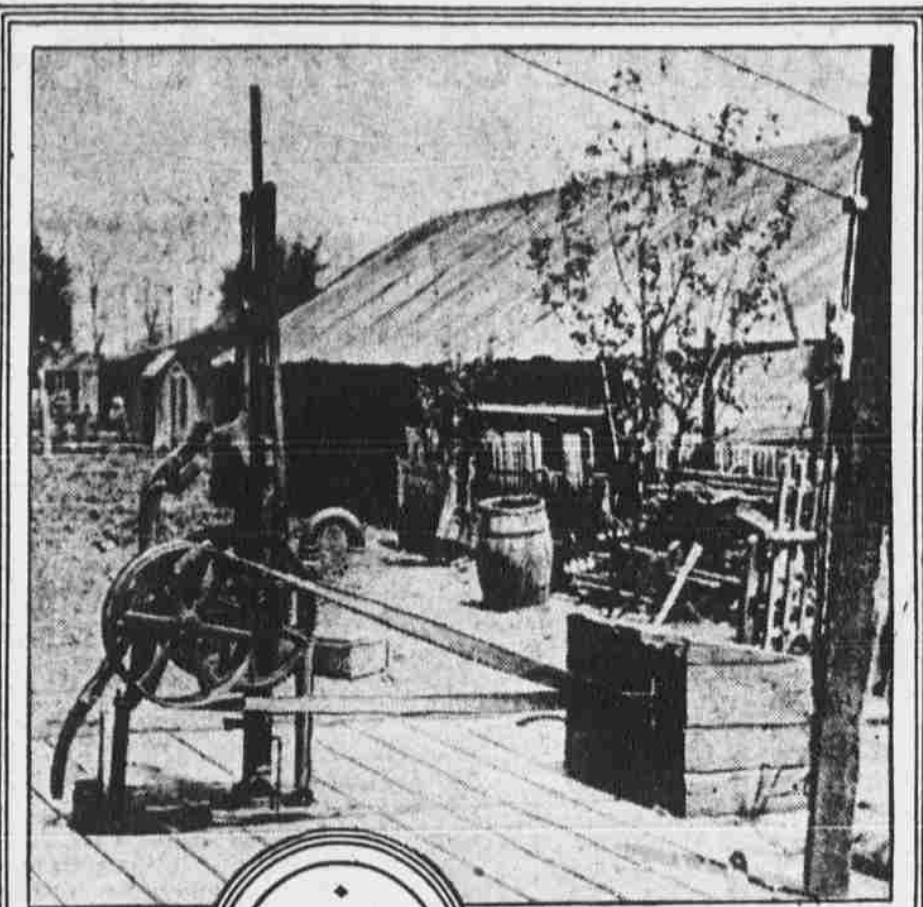
Outside the dairy there are more than thirty applications of electric drive for barn and field machinery, the more important being the electric feed grinder, corn sheller, ensilage cutter, grain elevator, concrete mixer, grain thrasher, grain grader, bone grinder, hay baler, hay conditioner and clover

Moreover, the operation of the ensilage cutter is another important item. A farmer who has electric service can cut his ensilage at any convenient time, which is not always the case when a custom machine is used. Motor driven ensilage cutters can safely be set near combustible material and operated under these conditions without fire risk. The switch can be so arranged that the motor can be instantly started or stopped by the man who is feeding the machine, for no engineer or expert attendant is required. The portable motor, which can be used for other purposes, can be used on this machine.

The threshing machine can also be operated at a saving by use of the motor. During the summer of 1912 careful tests were made by the General Electric Company to determine the power cost of threshing a bushel of grain. It was found that with power at 5 cents per kilowatt hour it cost $\frac{1}{2}$ mill per bushel for oats, 5 mills for barley and 8 mills for wheat.

Where poultry is raised electric current can be used to advantage in the operation of the incubators and brooders. It affords constant speed, remote control, low first cost, capacity for operating for long periods of time without a shutdown.

Electricity can also be used in lighting the way for more eggs. Any one approaching the chicken farm of Fred B. Naylor, near Allentown, N. J., after sunset and seeing his hen houses all ablaze with electric lights



1/2 H.P. MOTOR DRIVING A FARM PUMP

WHAT ONE CENT'S WORTH OF ELECTRICITY WILL DO ON THE FARM.

Figuring the cost of electricity at 10 cents per kilowatt hour, 1 cent's worth of electricity on the farm will:

Operate a six pound flatiron for 15 minutes.

Drive an electric vacuum cleaner long enough to clean 450 square feet of carpet.

Lift 100 gallons of water 100 feet. Run a sewing machine for two hours. Run a 12 inch fan for two hours. Keep a heating pad hot for two or three hours.

Run a buffer and grinder for one and one-quarter hours.

Do a washer full of washing. Operate a 16 candle power Mazda lamp for five hours.

Shell eight bushels of corn. Cut 200 pounds of fodder.

Cut 300 pounds of ensilage. Thrash one bushel of barley.

Separate sixty gallons of milk. Churn thirty-three pounds of butter.

Groom two horses. Stuff 200 pounds of sausage.

OPERATING THRESHER AT NIGHT WITH PORTABLE MOTOR OUTFIT.

Showing the Efficacy of Nonsense

ONE writer tells us that every man's life is either a dirge or a dance or a march of triumph. We might recast the idea by saying that everybody is either pessimistic, optimistic or progressive. Surely no argument is needed to prove how the spirit is poisoned by pessimism. Not only does it poison the soul, but the mind and body as well.

The dance referred to is a system of living falsely, called optimism. It is a flighty, frivolous, devil-may-care creed which says: "I never worry about anything. I'm going to enjoy life while I live, for when I die I'll be a long time dead. I'm going to eat, drink and be merry."

The march of triumph is the most acceptable of the three kinds of living, for it debars pessimism and includes optimism plus progress and common sense. But wouldn't it be advisable to halt occasionally in the march of triumph and indulge in a bit of the dance? It is mighty hard for us to constantly keep ourselves strung up to the very highest tension of discipline. Billy

Sunday once said that God must have believed in a little fun or else he wouldn't have made monkeys and parrots. There are scores of people whose entire makeup seems ideal except for the lack of a dash of nonsense.

The fact is that often the nonsensical way of expressing an idea is often the most effective. For instance, the apparently absurd phrase, "nothing to do but nothing," is more forceful than a lengthy discourse on the injurious effects of idleness or the value of constant employment. Once a negro put a profound psychological truth into comical phraseology when somebody tauntingly remarked that he was afraid to do a certain thing. His reply was, "I's not afraid I's afraid I's gwine to be afraid."

If many a fond mother who loves her wayward boy, who wants him to become a good, noble man, who has prayed for him, and who is fast growing old from anxiety—if this mother but knew the power of a little nonsense she might be happier herself and the boy might more nearly approach her ideal. Nonsense is just as sensible as worry is nonsensical.

would probably think the hens were having a birthday party.

There is a celebration, but the one having it is Mr. Naylor, for he is reaping the benefits of his practical demonstration of the fact that by means of electric light his egg production can be increased in the fall and winter months, when such production would probably fall off because of the shorter days. In other words, the hens are on summer schedule from one year's end to another.

Motors for Refrigerating Plants.

Right here it may be of interest to know that the agricultural department of Cornell University and a number of other agricultural colleges have been working along the same lines that Mr. Naylor has developed. In fact, at a recent meeting of the New York State Federation of Poultry Associations, held in New York, Prof. James E. Rice of Cornell related results of tests that he had made in connection with increasing egg production by the use of artificial light. He stated that his experiments showed that 100 chickens in a henhouse feeding with electric lights laid 135 dozen more eggs in a given time than 100 chickens in an unlighted henhouse. The idea of the electric lights is to give the chickens more time in which to eat, so that the following morning they will be in a better condition than they would be had their previous day's feeding been on a shorter day schedule.

For the lighting of yards and other large areas highly efficient arc lamps are available. This arc has already been successfully used in illuminating a field so that threshing can be done by night as effectively as by daylight. This allows the farmer to take advantage of fair weather. On rainy days the motor can be used to grind feed, clean and grade grain, shell corn, &c.

Motors also afford an ideal method of operating refrigerating plants. Cold storage by means of natural ice has three inherent defects—the presence of considerable moisture or dampness, the impossibility of regulating and controlling temperature and a constant reduction of the available energy. In addition to this there is the labor and time involved in cutting and storing the ice and the inherent danger of impurities which do not exist in ice artificially made with pure spring or well water.

There are thousands of farms throughout this country that are equipped with electric appliances to lighten the work of the farm-house and farmyards, and virtually all of these farmers will testify that the installation of their electrical equipment has resulted in a great reduction in their cost of operation over old fashioned methods.

Generates His Own Power.

A farmer to generate his own power needs but an electric generator, storage battery, switchboard and some kind of a driving unit for the generator, such as a water wheel, windmill, gas, oil or steam engine. Large electrical companies are now marketing just such an outfit at a very low cost.

The function of the generator is merely to transform the mechanical energy into electrical energy. The storage battery acts as a sort of a storeroom for the electrical energy corresponding to the water tank in a water supply system.

A farmer in the middle West who installed an electric light plant in his home, after years of living without one, made the following tabulation of time saved through the use of electricity:

Churn, 1 hour per week; cream separator, $\frac{1}{2}$ hour per week; washing machine, 1 hour per week; electric iron, 4 hours per week; cleaning, trimming and filling lamps and lanterns (now eliminated), $\frac{3}{4}$ hours per week; cleaning house with vacuum cleaner, 5 hours per week. This makes a total of 17 hours per week saved, which, valued at 40 cents per hour for himself and wife, amounts to \$6.80 a week (a total of \$353.60 a year, or as much as the entire system cost him).

No farm need be without electric power, which is destined to become the principal source of light and power in every home. The applications of electricity are no longer an experiment but actual working facts.